



Testicular Cancer

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What Is Testicular Cancer?

Testicular cancer is a disease in which cancer cells form in the tissues of one or both testicles. The testicles are 2 egg-shaped glands located inside the scrotum (a sac of loose skin that lies directly below the penis). The testicles are held within the scrotum by the spermatic cord, which also contains the vas deferens and vessels and nerves of the testicles.

The testicles are the male sex glands and produce testosterone and sperm. Germ cells within the testicles produce immature sperm that travel through a network of tubules (tiny tubes) and larger tubes into the epididymis (a long coiled tube next to the testicles) where the sperm mature and are stored.

Almost all testicular cancers start in the germ cells. The two main types of testicular germ cell tumors are seminomas and non-seminomas. These 2 types grow and spread differently and are treated differently. Non-seminomas tend to grow and spread more quickly than seminomas. Seminomas are more sensitive to radiation. A testicular tumor that contains both seminoma and non-seminoma cells is treated as a non-seminoma.

Testicular cancer is the most common cancer in men 20 to 35 years old. Health history can affect the risk of testicular cancer.

What Are the Risk Factors for Testicular Cancer?

Anything that increases the chance of getting a disease is called a risk factor. Having a risk factor does not mean that you will get cancer; not having risk factors does not mean that you will not get cancer. Risk factors for testicular cancer include:

- Having had an undescended testicle
- Having had abnormal development of the testicles
- Having a personal history of testicular cancer
- Having a family history of testicular cancer (especially in a father or brother)
- Being white

What Are the Signs and Symptoms of Testicular Cancer?

Signs and symptoms of testicular cancer include swelling or discomfort in the scrotum. These and other signs and symptoms may be caused by testicular cancer or by other conditions:

- A painless lump or swelling in either testicle
- A change in how the testicle feels
- A dull ache in the lower abdomen or the groin
- A sudden build-up of fluid in the scrotum
- Pain or discomfort in a testicle or in the scrotum

What Tests Are Used to Detect (Find) And Diagnose Testicular Cancer?

The following tests and procedures may be used:

- **Physical exam and history**
- **Ultrasound exam of the testes:** A procedure in which high-energy sound waves (ultrasound) are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram.
- **Serum tumor marker test:** A procedure in which a sample of blood is examined to measure the amounts of certain substances released into the blood by organs, tissues, or tumor cells in the body. Certain substances are linked to specific types of cancer when found in increased levels in the blood. These are called tumor markers. The following tumor markers are used to detect testicular cancer:
 - Alpha-fetoprotein (AFP).
 - Beta-human chorionic gonadotropin (β -hCG).

Tumor marker levels are measured before inguinal orchiectomy and biopsy, to help diagnose testicular cancer.

- **Inguinal orchiectomy:** A procedure to remove the entire testicle through an incision in the groin. A tissue sample from the testicle is then viewed under a microscope to check for cancer cells. (The surgeon does not cut through the scrotum into the testicle to remove a sample of tissue for biopsy, because if cancer is present, this procedure could cause it to spread into the scrotum and lymph nodes. It's important to choose a surgeon who has experience with this kind of surgery). If cancer is found, the cell type (seminoma or non-seminoma) is determined in order to help plan treatment.

What Determines How Testicular Cancer Is Treated and Prognosis?

Certain factors affect prognosis (chance of recovery) and treatment options:

- Stage of the cancer (whether it is in or near the testicle or has spread to other places in the body, and blood levels of AFP, β -hCG, and LDH)
- Type of cancer
- Size of the tumor
- Number and size of retroperitoneal (low back-side) lymph nodes

Testicular cancer can usually be cured in patients who receive chemotherapy or radiation therapy after their primary treatment. Treatment for testicular cancer can cause infertility that may be permanent. Patients who may wish to have children should consider sperm banking before having treatment. Sperm banking is the process of freezing sperm and storing it for later use.

The process used to find out if cancer has spread within the testicles or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment.

How Does Testicular Cancer Spread?

Cancer can spread through tissue, the lymph system, and the blood:

- **Tissue.** The cancer spreads from where it began by growing into nearby areas.
- **Lymph system.** The cancer spreads from where it began by getting into the lymph system. The cancer travels through the lymph vessels to other parts of the body.
- **Blood.** The cancer spreads from where it began by getting into the blood. The cancer travels through the blood vessels to other parts of the body.

When cancer spreads to another part of the body, it is called metastasis. The metastatic tumor is the same type of cancer as the primary tumor. For example, if testicular cancer spreads to the lung, the cancer cells in the lung are actually testicular cancer cells. The disease is metastatic testicular cancer, not lung cancer.

What Are the Stages Used for Testicular Cancer?

In addition to stage, testicular cancer may be grouped according to how well it may respond to treatment such as good, intermediate or poor. Stages are described below:

Stage 0

In stage 0, abnormal cells are found in the tiny tubules where the sperm cells begin to develop. These abnormal cells may become cancer and spread into nearby normal tissue. All tumor marker levels are normal. Stage 0 is also called germ cell neoplasia in situ.

Stages I -III (1-3)

Stages 1, 2, or 3 describes the involvement of cancer in or around the testes or to distant sites. Other factors in the staging process include the extent or absence of lymph node involvement and levels of tumor markers. In addition to a number, staging will include an additional letter such as A, B, or C.

Recurrent Testicular Cancer

Recurrent testicular cancer is cancer that has recurred (come back) after it has been treated. The cancer may come back many years after the initial cancer, in the other testicle or in other parts of the body.

Treatment for Testicular Cancer

Treatment for testicular cancer depends on the type and stage of the disease.

Surgery

Surgery to remove the testicle (inguinal orchiectomy) and some of the lymph nodes may be done at diagnosis and staging. Tumors that have spread to other places in the body may be partly or entirely removed by surgery. After the doctor removes all the cancer that can be seen at the time of the surgery, some patients may be given chemotherapy or radiation therapy to kill any cancer cells that are left. Treatment given after the surgery, to lower the risk that the cancer will come back, is called adjuvant therapy.

Radiation Therapy

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells or keep them from growing.

Chemotherapy

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing.

High-Dose Chemotherapy With Stem Cell Transplant

High-dose chemotherapy with stem cell transplant is a method of giving high doses of chemotherapy and replacing blood-forming cells destroyed by the cancer treatment. Stem cells (immature blood cells) are removed from the blood or bone marrow of the patient or a donor and are frozen and stored. After the chemotherapy is completed, the stored stem cells are thawed and given back to the patient through an infusion. These reinfused stem cells grow into (and restore) the body's blood cells.

Follow-Up Tests May Be Needed

Some of the tests that were done to diagnose the cancer or to find out the stage of the cancer may be repeated. Some tests will be repeated in order to see how well the treatment is working. Decisions about whether to continue, change, or stop treatment may be based on the results of these tests.

Men who have had testicular cancer have an increased risk of developing cancer in the other testicle. A patient is advised to regularly check the other testicle and report any unusual symptoms to a doctor right away. Long-term clinical exams are very important. Check-ups will be frequent during the first year after surgery and less often after that.

Support is available for coping with changes that may have happened because of cancer treatment. Your healthcare team can offer ideas as well as a plan of care for long-term follow-up.

What Are Clinical trials?

Clinical trials are done to find out if new cancer treatments are safe and effective or better than the standard treatment.

People who take part in a clinical trial may receive:

- The standard treatment alone or
- The standard treatment plus the new treatment being studied

Many of today's standard treatments for cancer are based on earlier clinical trials.

Ask if there is a clinical trial right for you.

Taking part in a clinical trial helps improve the way cancer will be treated in the future. Even when clinical trials do not lead to effective new treatments, they often answer important questions and help move research forward.

Some clinical trials only include people who have not yet received treatment. Other trials test treatments for those whose cancer has not gotten better. There are also clinical trials that test new ways to stop cancer from coming back or reduce the side effects of cancer treatment.

To Learn More About Testicular Cancer

American Cancer Society

<https://www.cancer.org/>

National Cancer Institute

<https://www.cancer.gov/>

National Comprehensive Cancer Network Guidelines for Patients

<https://www.nccn.org/patients/guidelines/cancers.aspx>

MedlinePlus

<https://medlineplus.gov/>

Common Questions

What does the pathology report say?

What is the stage of my cancer?

What are my goals for treatment?

What are my treatment choices?

What kind of support services are available for me about finances, emotions, spiritual questions, etc.?

My Health Care Team	Contact Information
Surgeon:	
Medical Oncologist:	
Radiation Oncologist:	
Primary Care Doctor:	
Navigator:	
Nurse:	
Registered Dietitian Nutritionist:	
Other:	
Other:	

Adapted from: PDQ Testicular Cancer Treatment. Bethesda, MD: National Cancer Institute.

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